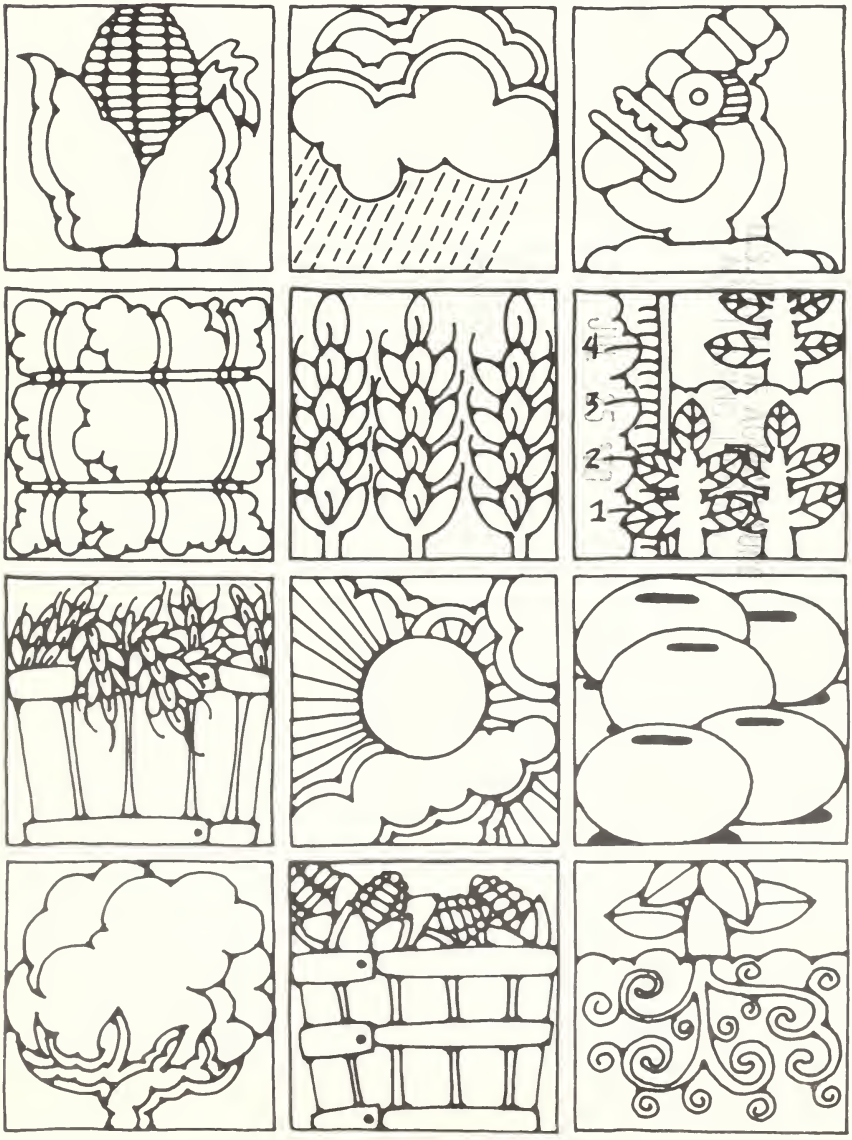
agricultural situation

THE CROP REPORTERS MAGAZINE
U.S. DEPARTMENT OF AGRICULTURE • CROP REPORTING BOARD

BETTER WAYS TO MEASURE YIELDS



BETTER WAYS TO MEASURE YIELDS

Back in the 1950's, USDA's first-of the-season-corn production forecasts missed the mark by an average of 6.6 percent. During the past 3 years this margin narrowed to 2.9 percent.

Part of the reason: Over the years, the Crop Reporting Board has added in-field plant counts and measurements and sophisticated sampling methods to supplement the crop information it gathers from farmers.

Changes like these originate in the Statistical Research Division, which continually seeks new and improved methods of collecting and providing crop and livestock information. Better acreage estimates, improved yield forecasts before harvest, and more precise estimates of harvested yield form the basis for more reliable crop production data.

Wendell Wilson, head of the Division's Yield Assessment Section, sees his research work falling into two main categories. "First," says Wilson, "we monitor current data gathering procedures to see what works well and what doesn't so that we can fine tune our current methods for better results.

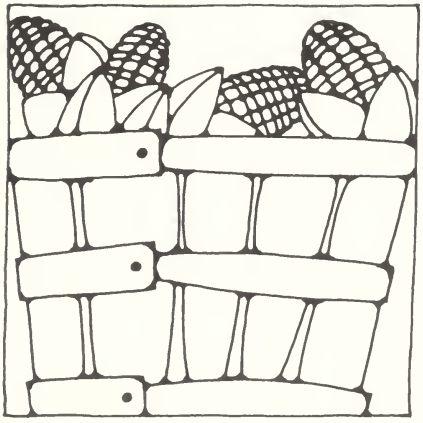
"Our second goal is to develop new techniques that can be added to our program for determining crop yields."

This type of research covers a gamut of commodities ranging from fruit and citrus crops in Florida and California, to tart cherries in Michigan, pecans in Mississippi, and papayas in Hawaii. The larger projects, however, center on major field crops—corn, cotton, wheat, and soybeans.

To make timely forecasts for each of these crops, the Crop Reporting Board relies on both subjective and objective data. The first stem from farmers' judgments of crop conditions and are often subject to certain observational biases.

Objective methods refer to the actual plant counts and measurements made in sample fields throughout the growing season by trained enumerators. These first-hand observations are designed to produce factual yield indications that are *not* based on judgment.

"Together the two systems have served us well," Wilson relates, "but we continually strive for refine-



ments and adjustments to improve results."

Two projects to improve current objective methods involve cotton and soybeans. During the past 2 crop years, Wilson's unit conducted a Cotton Yield and Ginning Research Study in the Mississippi Delta and Texas Panhandle.

Analysis of the first year's data showed a high correlation between seed cotton estimates based on current objective yield procedures and the amount of lint cotton actually ginned.

However, the study did uncover the need to account for concentrations of harvest loss in stripper picked areas, such as the Texas Panhandle, to improve estimates of harvested yield.

"Right now," Wilson explains, "we're examining data from both years to see if there's a stable relationship between actual lint cotton yields and our seed cotton estimates. If there is, lint yields can be tied directly to field measurement of seed cotton; if not, methods may need to be developed for determining the relationship for each crop year.

"This year, we plan to examine a new method of collecting objective data for soybeans, which we call 'destructive counting.' We anticipate running this study along with our regular objective yield work in Illinois."

In experimental plots within each sample field, enumerators will make the usual plant counts and measurements, but *after* they've clipped off the plants at ground level. This will help determine if removing a few plants for closer examination will give more accurate indications of plant characteristics than current methods in which the plants are left intact.

Also, during the August and September field visits, leaves from experimental plots will be mailed to Washington, D.C., to be analyzed for total dry matter and nitrogen content. "We expect to find out," says Wilson, "if leaf dry matter and nitrogen content—which we can only get by destroying the plants—are useful indicators of soybean yields, especially for the early season forecasts."

Another chief area of research focuses on developing forecasting methods that more closely reflect conditions within the current year. Right now, crop forecasting "models," or formulas, are based on relationships determined in previous crop seasons.

In years when crop growth and development are unusual, these relationships may shift and forecasting accuracy is likely to suffer. Since the need for reliable forecasts becomes even more acute in unusual years, Wilson's group is giving high priority to building within-year growth models to project yields based on crop growth and development within the present season.

The within-year models relate the growth of grain dry matter to some measure of time after a distinct change in plant development occurs

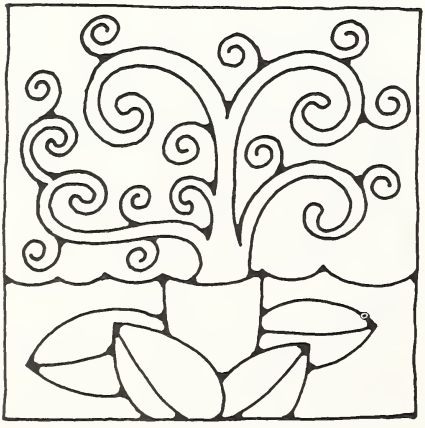
near the time of pollination and fertilization. For corn, this has been the time after silk emergence or silk drying, and for wheat, the time following head emergence or flowering.

Generally, the models reflect a slow period of initial growth, followed by a rapid increase in the growth rate, and then a gradual tapering off until all development stops at maturity. Based on observations up to a forecast date, the model can project the amount of dry matter at maturity, and expand that information to project yield per acre.

"We've worked previously with corn growth models in Iowa, Nebraska, South Dakota, Texas, and Missouri; and with wheat growth models in North Dakota and Kansas," Wilson reports.

This year the within-year growth model for wheat will be studied in 24 small test plots in each of four Kansas wheat fields. Enumerators will determine a flowering date for each of the 100 tagged stalks that do flower in each plot.

Field personnel will also clip a random sample of heads each week based on flowering date and forward the clippings to a laboratory where dried head weight will be determined. Shortly before harvest, they'll clip nearby heads to determine dry kernel weight. This will provide a factor for converting head weight to kernel weight at 12 percent moisture—the standard moisture content at which grain yield and production are reported. Field measurements of harvest loss will be used to adjust to a harvested yield basis.



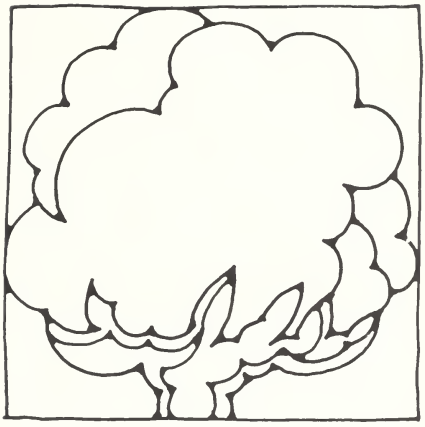
"We'll check the model's accuracy after harvest," says Wilson, "by comparing the indicated yield with the actual yield as measured by delivery of the grain to local elevators.

"This year we are also conducting a Corn Yield Research Project that will involve testing a within-year growth model and seeing if combining various weather data and biological growth data will strengthen early and mid-season yield forecasts.

"The first part of this project will be to evaluate a yield model developed at the University of Missouri that uses only a minimum of weather and biological data, planting date, tasseling date, available soil moisture at planting, and total weekly rainfall and average maximum temperature for a 10-week period starting 6 weeks before the crop has fully tasseled. Enumerators will carry out this part of the project in 20 Missouri corn fields.

The project's second goal is to come up with in-field and laboratory measurements of plants and environmental factors that are closely tied to final yield and can be used to estimate yields at the field level. Data will be collected to run the within-year growth model as well as forecast yields using the regular objective yield procedures. These efforts are being made in 8 of the 20 corn fields.

"After the crop is harvested, we'll



compare the forecasts and final yield estimates generated with field output measured at elevator delivery. This will show us how all the indications we've gotten from regular objective yield procedures, growth model projections and the University of Missouri model—stack up against the actual yield."

Another system under study is called GOSSYM (taken from the scientific name for cotton). This is one of the more detailed crop growth and development models available. It's one of the few, for example, that accounts for rooting zone and other below-ground conditions and attempts to relate them to factors above ground.

This year's Cotton Yield and Simulation Study will test the GOSSYM model in three Mississippi cotton fields, each containing 24 test plots. Enumerators will visit sample plots on a weekly basis during the growing season to measure plant height, canopy cover, and insect damage, and to monitor plant growth.

On four plants in each of these 24 plots, the development and subsequent output for each fruiting position will be 'mapped' during the entire season. Soil moisture and nutrient levels will be measured for each plot. Daily precipitation, solar radiation, and temperature data will also be obtained for each field for use in the model.

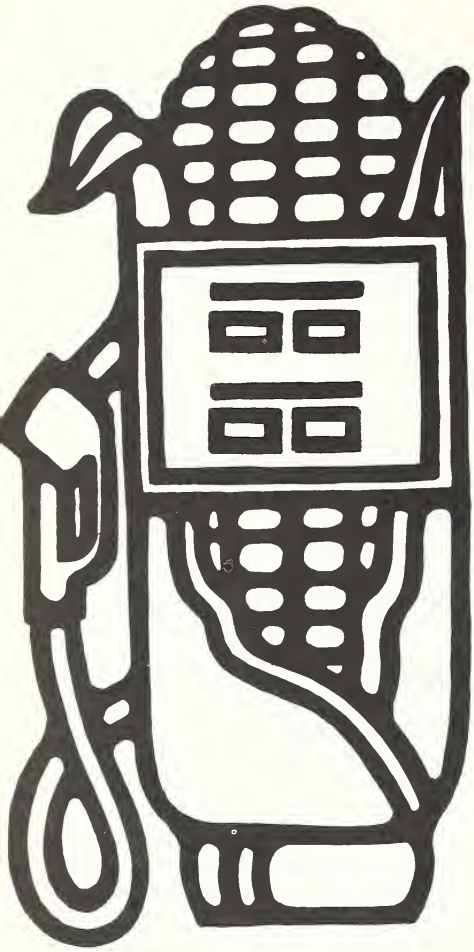
"To more fully evaluate various crop yield-weather models, we're continuing to develop weather simulation capabilities," explains Wilson. "This is essential in using weather/growth models to forecast crop yields.

"The crop growth simulation models must 'grow' the plants all the way to maturity until the one thing we're interested in forecasting—the grain or fruit—has been completely produced.

"Because we don't know what the weather will be like from a forecasting date until plant maturity, it's difficult to plug weather data into a forecasting system. We could simulate plant development until maturity by using long-term average weather conditions, but this has all the 'bad' qualities of an average—it's a little bit wet and cold and a little bit hot and dry at the same time and *very* different from weather extremes in the real world.

"What we've developed, and continue to refine, is a procedure for generating, through computer simulation, sequences of daily weather data. By developing many independent sequences of weather from a forecasting date until crop maturity, we can study the extent of uncertainty about yields due to our lack of knowledge about future weather. This may ultimately help us determine the best times for forecasting yields and crop production.

"Results so far," claims Wilson, "have been highly encouraging. We expect that we can develop a simple and relatively cheap model to produce daily weather sequences based on sound meteorological theory."



GASOHOL: COSTLY WAY TO GO

Hopes were high not long ago. Fuel made from grain—one answer, it seemed, for two big problems. It could lessen dependence on foreign oil while easing this country's bin-bursting grain supplies.

But gasohol—a mixture of 90 percent gasoline and 10 percent alcohol fermented from grain—may not be the cure-all its backers expect.

Recently, Congress asked USDA economists to examine the impact of introducing a national gasohol program. The findings—the technology is there; currently, the economic advantage is not.

Corn was chosen as the alcohol-producing grain because of its high starch content, ease in processing, abundance, and lower price compared with wheat. Basically, corn will produce 2.6 gallons of ethanol per bushel, leaving distillers grains—a high-protein animal feed—as a major byproduct.

With corn at $2 a bushel, the lowest projected cost for alcohol is 96 cents, or 58 cents higher than the wholesale cost of gasoline. The blend that forms gasohol would carry a retail price of 67.8 cents a gallon or nearly 6 cents higher than the pump price of gasoline.

The sale of distillers grains for feed could offset some of the cost, but at the same time, depress the market for other high-protein feeds such as soybean meal and seriously disrupt the soybean crushing industry.

The economists cite several reasons besides cost of production that would put gasohol on the back-burner for now.

The initial investment in distilleries and hard goods would require substantial amounts of capital. To distill enough ethanol for a national gasohol program, it would take about 500 plants producing 20 million gallons annually. That alone would carry a price tag of $15 to $17 billion. Separate storage and service station facilities, such as those constructed for lead-free fuel, would tack on more millions each year.

Perhaps more significantly, the vagaries of nature could hamper production. Does a farmer negotiate with a distillery for his grain? Can he deliver if there's a short crop? What if he can earn more on the open market, say for feed?

Other factors work against gasohol—a proposed exemption of 4

cents per gallon from the Federal highway tax, and possible State exemptions, would still not make the fuel competitive with gasoline, and at the same time would reduce government revenues.

The amount of energy needed to produce ethanol exceeds the amount of energy provided by the final product. Further, the fuel energy produced from a $2 bushel of corn would fall far below the amount of energy that the same bushel can currently buy in the oil import market.

What if the price of gasoline doubles? For ethanol to become competitive, production costs would have to remain constant—an unlikely prospect since a major component in the production of energy is the use of energy itself.

To fill the needs of a gasohol program and assure an ample supply of grain to food and feed markets, idle land would be forced into production, and if corn were the major ethanol agent, some land might be diverted from other crops such as wheat and soybeans.

Farm income would increase slightly due to higher crop receipts, but livestock producers wouldn't share the benefits. Feeding distillers grains—the high-protein gasohol byproduct—would slow down the livestock cycle since the feed's high fiber content requires a longer digestive phase. This would drive up overall production costs and ultimately lead to higher consumer food prices.

ELF SOYBEAN A BIG PERFORMER

A plant named Elf shows smaller can be better. The Midwest's first semi-dwarf soybean plant is making its debut this season in the fields of Illinois and Ohio.

The new plant is distinguished by its short stature and resistance to early lodging (falling over), which often reduces yields of other varieties grown on soils of above-average fertility.

An agronomist with USDA's Science and Education Administration (SEA) found that in high-yield environments, Elf outperformed another species, Williams, by 5 bushels an acre in 30-inch rows and 10 bushels in 7-inch rows. In regional tests conducted by Midwestern agricultural experiment stations, Elf and Williams varieties produced roughly equal yields in 30-inch rows, but Elf reached an average height of only 22 inches compared with Williams' 37 inches.

Lodging creates a serious problem during early to mid-August for the indeterminate soybean varieties produced in northern areas. Indeterminate plants are those that continue growing taller after flower formation has begun, increasing the possibilities of falling over and thereby preventing the chance for higher soybean yields.

Elf was produced by crossbreeding several generations of beans, beginning with a cross between the high-yielding taller plants from northern States with shorter southern varieties that terminate in a flower.

The Illinois and Ohio State Agricultural Experiment Stations cooperatively released the Elf soybean with USDA. Other semi-dwarf varieties similar to Elf may be released over the next few years after undergoing suitability tests for Midwest growing conditions.

USDA did not increase or distribute Elf seeds to growers. Rather, Illinois and Ohio foundation seed organizations produced and provided the seeds to certified seed growers in their States. Elf seed should be available for general farm production in 1979.

SURVEYSCOPE

Agricultural Situation presents a series of articles highlighting special surveys undertaken in various States. While these are not national surveys, they are important to the agriculture in individual States. This month we feature Idaho.

"Each year, we send enumerators into potato fields across the State for onsite counts and measurements that help us forecast the size of the upcoming crop," says Richard Max, Idaho agricultural statistician.

"Part of that work involves harvesting a small sample of potatoes to be used later in estimating how the crop will 'grade out' under USDA standards."

Last year, enumerators took samples from 311 plots located in randomly selected fields throughout the State. Enumerators visit each field just before harvest—or when all vines are dead and tubers can't grow any larger.

Within each field, enumerators stake off two 20-foot sections, take row space measurements, count the hills in both sections, and dig up three hills of potatoes from each. The average weight of these potatoes, coupled with the hill counts and measurements, provides an indication of gross yield per acre.

Using a special gauge, field personnel eliminate all potatoes under 1 inch in diameter, and place the

Last year, 51 percent of Idaho's potato crop graded out as U.S. No. 1, according to an . . .

remainder in bags to be shipped to a laboratory for weighing and grading.

Lab results showed that 51 percent of the Idaho crop made U.S. Grade No. 1 last year, down from close to 57 percent in 1976. These potatoes, which go mainly into the fresh market, must measure at least 2 inches or weigh at least 4 ounces.

Size and weight aren't the only standards, however. No. 1 potatoes must also be firm, fairly clean and well-shaped, and free of damage or any evidence of a host of potato diseases. Any given lot of No. 1's must also have the same general shape, color and character of skin and flesh.

"Since most Idaho potatoes are the russet variety," Max explains, "we report size data only up to 2 inches in diameter and beyond that, record the data in ounces. That's because russets are long, narrow potatoes that grow mainly in length after reaching a certain thickness."

The largest single group of No. 1 potatoes—18 percent—fell within the 4 to 6 ounce range. Just over 3 percent weighed in at the uppermost level of 14 ounces and over.

Processing grade potatoes—1½ inch minimum—accounted for nearly 43 percent of the 1977 crop. This group includes the roughly 13 percent of the harvest classed as No. 2 table stock, which met the minimum size and weight requirements, but not the quality standards, for No. 1 potatoes.

The Crop Reporting Board publishes size and grade data from Idaho and other major producing States in the December Crop Production report. The same report also carries average harvesting losses.

To gather this information, enumerators return to half the sample plots to collect and weigh all potatoes and potato pieces left after the harvest. "Last year," Max relates, "our harvesting loss averaged 30 hundredweight an acre, the same as the year before. Average yield for Idaho potatoes worked out to 245 hundredweight."

. . . annual survey that begins in random 20-foot test plots laid out by field enumerators.

BANNER YEAR FOR FARM EXPORTS

Foreign markets paid a record $24 billion for U.S. farm goods during fiscal 1977, up 5 percent from year-earlier levels.

Marketings abroad got a boost from accelerated sales of oilseeds and products, cotton, tobacco, livestock products, fruits, and vegetables. Though wheat and corn receipts declined, the downturns weren't enough to check the brisk sales pace.

Every State had a hand in exports; however, 10 of them—Illinois, Iowa, California, Texas, Indiana, Kansas, Nebraska, North Carolina, Ohio, and Minnesota—cornered 60 percent of the market.

Five commodity groups carried 64 percent of the export load. Leading the way were feed grains valued at $5.35 billion, with the Corn Belt States alone accounting for over half the sales. Exports of corn, grain sorghum, barley, and oats represented 25 percent of U.S. production.

Soybeans charged into second place among principal commodity exports when almost half the crop (15 million metric tons) was shipped overseas. The export total reaches nearly 60 percent of the soybean harvest if soy oil and meal are added. The Corn Belt and Delta States—especially Ark. and Miss.—were the primary producers.

Wheat and flour shipments dipped to third position when lower prices combined with decreased volume. Unmilled wheat exports dropped 20 percent below the previous year to 23.8 million metric tons, and value plunged 38 percent to a bit more than $2.8 billion. About 44 percent of the wheat crop left the country, with the Northern Plains States supplying about one-third of the total.

Cotton exports, at $1.5 billion, exceeded 40 percent of total production while tobacco sales topped $1 billion, taking fifth place among U.S. farm shipments. About a third of all tobacco grown was exported.

TOP EXPORTS, TOP SUPPLIERS

Commodity	United States	Top Three States			10 High States
		Million dollars			
All commodities	24,013.4	Ill. 2,539.3	Iowa 2,042.0	Calif. 1,774.5	14,260.5
Feed grains	5,345.3	Ill. 1,016.5	Iowa 712.7	Ind. 563.0	4,314.7
Soybeans	4,306.6	Ill. 823.7	Iowa 695.5	Ind. 368.5	3,542.0
Wheat and flour	3,003.1	Kansas 474.1	N. Dak. 402.5	Mont. 234.0	2,179.2
Cotton, including linters	1,538.2	Texas 474.7	Calif. 368.7	Miss. 166.8	1,469.0
Tobacco	1,084.7	N.C. 550.5	Ky. 147.6	S.C. 94.8	1,070.0
Protein meal	955.3	Ill. 179.3	Iowa 151.7	Ind. 79.9	774.9
Fruits and preparations	803.9	Calif. 417.3	Fla. 178.5	Hawaii 49.9	765.9
Hides and skins	779.5	Wis. 78.6	Texas 69.1	Iowa 49.6	434.0
Vegetables and preparations	697.2	Calif. 157.6	Wash. 94.2	Idaho 85.2	569.7

Barley growers can thank the brewing industry for maintaining barley's position as a major U.S. crop.

The biggest share of total output goes into livestock and poultry feed, but that amount has dwindled from 251 million bushels in 1960 to 182 million in 1975. Much of the drop was due to smaller supplies as farmers shifted barley land into wheat in response to strong foreign demand for food grains during the 1970's.

In contrast, production of malting barley—a major grain used by the brewing industry—shot from 82 million bushels to 127 during the same period. This reflects a gain in beer sales from 84 million to 150 million barrels in the past 25 years.

Barley's use as feed began slipping rapidly after hitting a record high during 1970/71. A major factor was the removal of set-aside requirements and acreage restrictions on wheat. Feed barley, like oats and rye, usually sells for less than wheat, sorghum, corn, and soybeans. Without acreage restrictions, producers naturally shift to higher valued crops.

But as acreage planted to feed barley declined, malt barley acreage turned higher. Malt barley commands a bigger price than the feed variety, thereby influencing ample production for the malting industry.

Roughly 90 percent of the country's malt output goes to brewers—providing the basic reason for barley's staying power. After several years of stable sales, the Nation's breweries saw their market advance 75 percent from 1958 to 1975.

Indications point to continued growth in U.S. beer consumption. According to current projections, breweries will use 4.8 million pounds of malt in 1980 and more than 7 million pounds in the year 2000, or the equivalent of nearly 210 million bushels of barley.

Seed and exports make up the remaining top outlets for barley. Seed use, however, trended downward during the 1960's and into the 1970's, reflecting the decline in planted acreage. Economists say seed use will probably not exceed 18 million bushels a year in the near future.

Of all outlets, exports (including grain equivalent of malt) have fluctuated the most, ranging from a record high of 122 million bushels in 1959 to a low of 10 million a decade later. So far in the seventies, barley exports have ranged between 24 and 93 million bushels and hold little promise of expanding much beyond the high end of the range, since most feed importers prefer corn and sorghum over other grains.

Adapted to a wide range of climates, barley is grown commercially in 36 States. Over time, however, production had become concentrated in the Northern Plains and Pacific Coast States.

Briefings

RECENT REPORTS BY USDA OF ECONOMIC, MARKETING, AND RESEARCH DEVELOPMENTS AFFECTING FARMERS.

MEAT ANIMAL RETURNS UP . . . Marketings and cash receipts from meat animals both lodged increases last year. According to the Crop Reporting Board, near-record cattle and calf receipts helped push total earnings from meat animals to $28 billion in 1977, compared with $27.1 billion the year before. Overall, cattle and calves contributed just over 72% of total receipts, followed by hogs and pigs at 26.3% and sheep and lambs, 1.4%. The tally sheet shows cattle and calves earning $20.2 billion on sales of a record 58.5 billion pounds; hogs and pigs brought $7.4 billion, the second consecutive yearly decline, despite increased marketings; and sheep and lamb receipts turned lower with $389 million as marketings fell 8%.

. . . **WHILE EGGS AND POULTRY HOLD STEADY** . . . Gross income from eggs and poultry totaled $7.1 billion last year, about the same as 1976. A record $3 billion in commercial broiler receipts helped offset reduced earnings from other chickens and a 4% downturn in egg receipts. The Crop Reporting Board noted a 4% upturn in broiler production to 3.4 billion birds, which brought an average live weight price of 23.6 cents a pound. Eggs averaged only 55.7 cents a dozen compared with 1976's 58.3 cents. Growers raised 3% fewer turkeys last year than the year before, but sales, at $905 million, rose by $80 million.

RECORD SALES TO THE GERMANS . . . West Germany imported a record $2 billion in U.S. farm products during 1977. Oilseeds and products accounted for 46% of total shipments, while grains made up 25%, tobacco 7%, and miscellaneous feeds, 6%. Coming off a good harvest in 1977, however, West Germany will probably import considerably less grain this year, and the value of U.S. farm shipments is expected to retreat to around $1.8 billion.

COCOA STAYS COSTLY . . . World cocoa bean production for the October-September 1977/78 season, forecast at 1.48 million metric

tons, is expected to top the previous year's poor output by 10%. Forecasts point to increases in all major growing areas of the world including an 11% upturn in Africa, the largest producer. However, grindings may remain near the low level of 1977, adding 100,000 tons to global stocks. Though world prices have eased over the past year, retail cocoa and chocolate prices probably will continue at their present high levels through 1978, reflecting the record high costs of cocoa beans currently being processed. Despite a reduced volume, the value of U.S. imports of cocoa beans and products totaled a record $966 million in 1977 compared with $595 million the year before.

FOR RICE GROWERS, PRICE IS RIGHT . . . The highest rice prices in 3 years highlight the crop's 1977/78 marketing year begun last August 1. Behind the upswing are reduced supplies, stepped-up exports, and prospects for the first reduction in ending stocks since 1974/75. Responding to the improved price picture, U.S. producers indicated on April 1 that they would expand their rice acreage 15% over last year to 2.59 million acres. USDA economists say farm prices will probably remain firm at $11 a hundredweight until new crop supplies become available.

HATCHING JOB . . . U.S. hatcheries produced more chicks in 1977 than the year before. Hatchery output of broiler-type chicks rose 4% to 3.6 billion. Arkansas was the top producer, followed by Georgia and Alabama. Broiler placements reached 3.4 billion from December 1976 through Novermber 1977, up 146 million from a year earlier. Hatchings of egg-type chicks increased 2% to nearly 502 million. California, with 50 million, edged Georgia by nearly a million birds. Turkey hatcheries turned out 148.4 million poults in 1977, down 1% from the previous year. The heavy breed hatch climbed 4% to 136 million; however, light breeds dropped a third from 1976 levels to 12.4 million.

LATEST WORD ON COFFEE . . . In its fourth estimate for the 1977/78 season, USDA's Foreign Agricultural Service puts world coffee output at 68.5 million bags. That's down 2% from the previous estimate, but up 7 million bags, or 11% over the 1976/77 crop. Two countries—El Salvador and Guatemala—account for most of the downturn, as lack of timely rainfall and other adverse weather conditions reduced yields sharply. U.S. green coffee imports during calendar 1977 totaled 14.8 million bags valued at $3.86 billion. While total volume dropped a fourth below 1976, value shot 47% higher.

ACREAGE UPDATE . . . Farmers say they'll plant more soybeans this year, but less corn, sorghum, wheat, and cotton. The roughly 48,000 producers responding to a mail survey around April 1 indicated they'd plant 224.1 million acres to a dozen major crops, nearly 3 million fewer than in 1977. Farmers reported intentions for the 12 crops shown below before they had much chance to consider options based on program changes announced by USDA on March 29. Effects of these changes on planting decisions will appear in the Crop Reporting Board's Acreage report on June 30.

Crop	1978 April Intentions	1977 Plantings	1978 as a % of 1977
	Thousand acres		*Percent*
Corn	80,237	82,680	97
Sorghum	15,925	16,994	94
Oats	16,408	17,793	92
Barley	9,998	10,586	94
Durum wheat	4,105	3,183	129
Other spring wheat	13,246	15,641	85
Soybeans	63,664	59,080	108
Cotton	12,915	13,711	94
Rice	2,594	2,261	115
Flaxseed	1,005	1,510	67
Sugarbeets	1,329	1,278	104
Sunflower seed	2,700	2,305	117

TOBACCO TRADE . . . U.S. tobacco exports surged to a record $1.7 billion last year, though volume dropped slightly. Sales of unmanufactured tobacco rose 9% to $1.1 billion, while receipts from tobacco products jumped 19% to $637 million. Despite a 35% drop in shipments to the United Kingdom, the European Community continued as the biggest buyer, followed by Japan. Even though U.S. imports of foreign leaf and products climbed by 18% last year, tobacco's contribution to the U.S. net balance of trade reached a new high of $1.36 billion.

SMALLER SLICE FOR FARMERS . . . Despite sharp drops in the farm price of wheat, retail prices for a 1-pound loaf of bread remained near 35.5 cents throughout 1977. The farm value of wheat in a loaf of bread averaged just over 2½ cents—about a cent lower than in 1976 and roughly 2 cents below 1975. The farmer's share for wheat in bread, at about 7% of the retail price, was the smallest since 1932.

Statistical Barometer

Item	1976	1977	1978—latest available data	
Farm Food Market Basket:[1]				
Retail cost (1967=100)	175	179	191	March
Farm value (1967=100)	179	179	196	March
Farmer's share of retail cost (percent)	39	39	41	March
Agricultural Trade:				
Agricultural exports ($bil.)	23	[2]24	2.5	March
Agricultural imports ($bil.)	11	[2]13	1.4	March
Farm Income:				
Volume of farm marketings (1967=100)	121	124	101	February
Cash receipts from farm marketings ($bil.)	94.3	95.0	101.2	([3])
Realized gross farm income ($bil.)	103.6	106.1	113.4	([3])
Production expenses ($bil.)	81.7	85.7	92.1	([3])
Realized net farm income ($bil.)	21.9	20.4	21.3	([3])
Income and Spending:				
Disposable personal income ($bil.)	1,185.8	1,309.2	1,400.5	([3])
Expenditures for food ($bil.)	199.5	218.3	147.6	([3])
Hogs and Pigs:				
Hogs and pigs on farms, March 1 (mil.)	40.8	44.1	44.7	March
Kept for breeding (mil.)	6.7	7.0	6.9	March
Market (mil.)	34.1	37.1	37.8	March
Sows farrowing, Dec.-Feb. (mil.)	2.1	2.3	2.3	March
Pig crop, Dec.-Feb. (mil.)	14.7	15.6	15.6	March
Pigs per litter (number)	7.2	6.8	6.8	March

[1]Average annual quantities per family and single person households bought by wage and clerical workers, 1960-61, based on Bureau of Labor Statistics figures.
[2]Preliminary.
[3]Annual rate, seasonally adjusted, first quarter.

Crop Reporting Board

AGRICULTURAL SITUATION

APRIL 1978 • VOL. 62 NO. 3
DIANE DECKER, EDITOR

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